PATENT SPECIFICATION

629,722

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Index at acceptance:—Class 89(ii), G1g.

PROVISIONAL SPECIFICATION.

Improvements in or relating to Nails.

I, CHARLES TOEMAN, a British subject, of 65, Chester Drive, North Harrow, Middlesex, do hereby declare the nature of this invention to be as follows:—

This invention relates to nails and particularly to nails so constructed to reduce the risk of their working loose under the action of vibration or of extreme climatic conditions.

It has been proposed in this connection to form nails having one or more grooves extending longitudinally along the shank or stem, each groove increasing in surface area from tip to head. The formation of such longitudinal grooves is rather difficult from a mass production point of view and it is the object of the present invention to provide an improved construction which lends itself to mass production and which is less likely to work loose.

In accordance with the present invention the stem or shank of a nail is provided with one or more helically arranged grooves, the surface area of which increases from tip to head. The grooves are preferably of V-shape in cross section and the included angle of the groove may vary from tip to head or may remain constant. For mass production purposes the grooves are produced by thread forming rollers whose peripheries vary in accordance with the shape of groove required.

In one construction in accordance with the invention, a nail is formed with eight helical grooves of large pitch extending from tip to head. Each groove is of V-shaped cross section, the included angle being about 120° and remaining constant from tip to head. The depth and width of the groove, however, increase from tip to head. The diameter of shank across the ungrooved parts remains substantially constant from tip to head. Where the nails are for use in wood, the edges of the grooves may be rounded to avoid cutting the wood fibres when the nail is driven home.

It will be seen that by virtue of using helical grooves of large pitch the nail may be hammered into position and also the effective area of contact between the nail and the material which holds it is very much increased over an ordinary nail and over a nail having longitudinal grooves. Also the fact that the cross section of the shank at the tip is actually larger than the cross section at the head produces a wedging action which further tends to reduce the tendency to work loose.

It will be appreciated that the depth and the width of the grooves may be increased separately or together from tip to head and that the shape of the cross section of the groove may be any practical shape which may be produced by rolling.

Dated this 12th day of September, 1947.

For the Applicant,
F. J. CLEVELAND & COMPANY,
Chartered Patent Agents,
29, Southampton Buildings,
Chancery Lane,
London, W.C.2.

COMPLETE SPECIFICATION.

Improvements in or relating to Nails.

I, CHARLES TOEMAN, a British subject, of 65, Chester Drive, North Harrow, Middlesex, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to nails and particularly to nails so constructed to reduce the risk of their working loose under the action of vibration or of extreme climatic conditions.

It has been proposed in Patent No. 580272 to form a nail having one or more grooves extending longitudinally along the shank or stem each groove increasing in surface area from tip to head. One of the objects of this invention is to provide an

improved or alternative construction which while lending itself to mass production is less likely to work loose.

In accordance with the present invention the stem or shank of a nail is provided with one or more helically arranged grooves the surface area of which increases from tip to head. The grooves are preferably of V-shape in cross section and the included angle of the groove may vary from tip to head or may remain constant. For purposes of mass production the grooves are produced by thread forming rollers whose peripheries vary in accordance with the shape of groove required.

In order that the invention may be clearly understood one embodiment thereof will now be described with reference to the accompanying drawings, in which:—

Figure 1 shows a perspective view of a grooved nail;

Figures 2 to 5 show cross sections of the nail shown in Figure 1 taken on the respective section lines II-II, III-III, IV-IV and V-V.

The nail comprises a head 10 a cylindrical shank 11 and a pointed end 12. A plurality of grooves 13 are formed extending helically around the shank each groove being of V-shaped cross section and having an included angle of approximately 120° which remains constant from tip to head. The depth and width of each groove, however, decreases from head to tip as shown in the cross sections in Figures 2 to 5. Where the nails are for use in wood the edges of the groove may be rounded to avoid cutting the wood fibres when the nail is driven home.

It will be seen that by virtue of using helical grooves of large pitch the nail may be hammered into position. Also the effective area of contact between the nail and the material which holds it is much increased over an ordinary nail and over a nail having longitudinal grooves. The fact that the cross section of the shank at the tip is actually larger than the cross section at the head produces a wedging action which further tends to reduce the tendency to work loose.

It will be understood that the grooves may be of any cross section, for example curved, and may alter in cross sectional shape throughout their length. The depth and width of the grooves may be varied separately or together for example the width of the groove may be constant and the depth may increase from tip to head.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A nail wherein the shank or stem is provided with one or more helically arranged grooves the surface area of which increases from tip to head.

2. A nail as claimed in Claim 1, wherein each groove is of V-shaped cross section the included angle remaining constant from tip to head.

3. A nail as claimed in Claim 1, wherein each groove is of curved cross section.

4. A nail as claimed in Claim 1, wherein the width of the groove is constant and the depth increases from tip to head.

5: A nail substantially as described with reference to the accompanying drawings.

Dated this 24th day of May, 1948.

For the Applicant,
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[This Drawing is a reproduction of the Original on a reduced scale.]

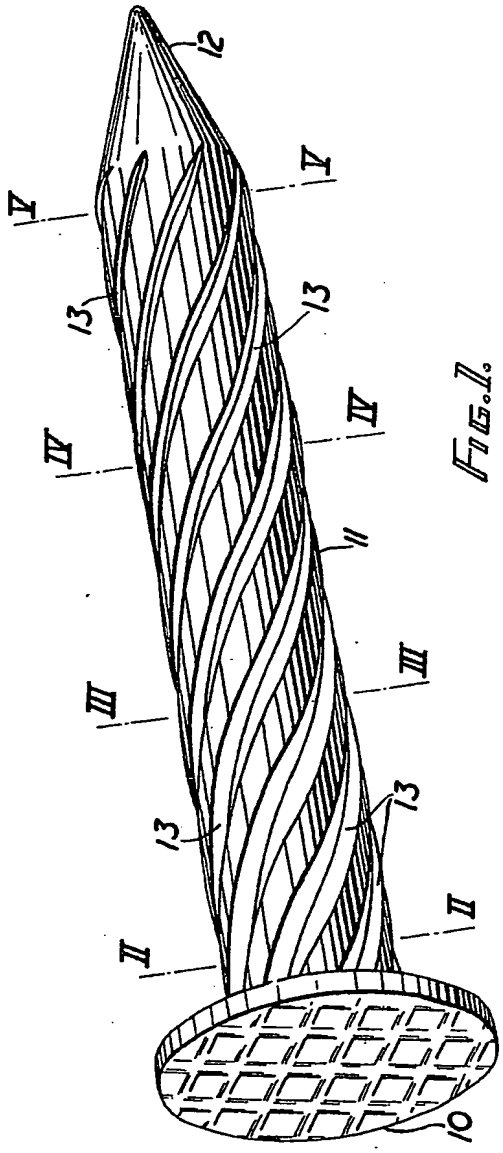

FIG. 1.

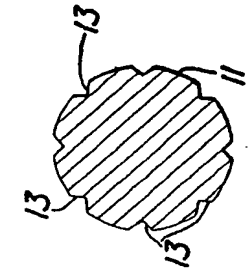

FIG. 5.

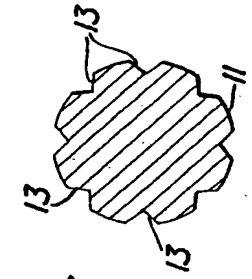

FIG. 4.

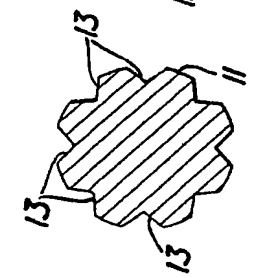

FIG. 3.

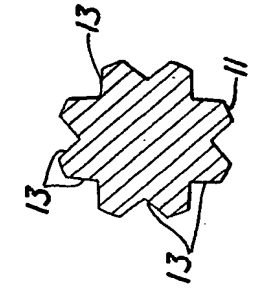

FIG. 2.

H. M. S. O. (Ty. P.)